

CLAIMS

- Sub B7 1. Fibre-reinforced pressure vessel (1, 6) comprising a rigid gas- or fluid-tight body (2, 7, 13, 19) overwound with fibre filaments (3, 10, 11, 18), whereby at least a number of fibre filaments (3, 10, 11, 18) can move freely with respect to one another and the fibre filaments (3, 10, 11, 18) are wound such that when the pressure vessel is under internal pressure, the fibre filaments (3, 10, 11, 18) are loaded exactly in their longitudinal direction.
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2. Fibre-reinforced pressure vessel (1, 6) according to claim 1, whereby all wound fibre filaments (3, 10, 11, 18) can move freely with respect to one another.
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- a 3. Fibre-reinforced pressure vessel according to claim 1 or claim 2, whereby the pressure vessel (1) has an isotenoid shape.
- Sub B7 15 a 4. Fibre-reinforced pressure vessel according to claim 1 or claim 2, whereby the pressure vessel (6) has a cylindrical shape.
- a 5. Fibre-reinforced pressure vessel according to any preceding claim, whereby the pressure vessel (1, 6) is provided with a coating (20).
- 20 6. Fibre-reinforced pressure vessel according to claim 5, whereby the coating (20) comprises synthetic rubber.
- a 7. Fibre-reinforced pressure vessel according to any of claims 1-6, whereby the rigid body (2, 7, 13, 19) is made of high-density polyethylene (HDPE) and the fibre filaments (3, 10, 11, 18) are carbon fibres.
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- a 8. Fibre-reinforced pressure vessel according to any of claims 1-6, whereby the rigid body (2, 7, 13, 19) is made of high-density polyethylene (HDPE) and the fibre filaments (3, 10, 11, 18) are glass fibres.
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- Sub B7 a 9. Fibre-reinforced pressure vessel according to any of claims 1-8, whereby the pressure vessel (1, 6) can withstand a working pressure in the range of 0-5 bar.

a 10. Fibre-reinforced pressure vessel according to ~~any of claims 1-8~~, whereby the pressure vessel (1, 6) can withstand a working pressure in the range of 0-10 bar.

5 R 11. Fibre-reinforced pressure vessel according to ~~any of claims 1-8~~, whereby the pressure vessel (1, 6) can withstand a working pressure in the range of 0-35 bar.

a 12. Fibre-reinforced pressure vessel according to ~~any of claims 1-8~~, whereby the pressure vessel (1, 6) can withstand a working pressure in the range of 0-100 bar.

10 a 13. Fibre-reinforced pressure vessel according to ~~any of claims 1-8~~, whereby the pressure vessel (1, 6) can withstand a working pressure in the range of 0-300 bar.

a 14. Fibre-reinforced pressure vessel according to ~~any of claims 1-8~~, whereby the pressure vessel (1, 6) can withstand a working pressure in the range of 0-600 bar.

15 a 15. Fibre-reinforced pressure vessel according to ~~any of claims 9-11~~, suitable for use as a gas flask for propane or butane or a mixture thereof for household uses.

20 a 16. Fibre-reinforced pressure vessel according to claim 12 ~~or claim 13~~, suitable as a fuel tank, in particular for LPG, for use in motor vehicles.

a 17. Fibre-reinforced pressure vessel according to claim 13 ~~or claim 14~~, suitable as a fuel tank for CNG or compressed air.

25 18. Fibre-reinforced pressure vessel according to claim 14 suitable for use as a cryogenic gas system in space technology applications.

30 a 19. Fibre-reinforced pressure vessel according to ~~any preceding claim~~, whereby the pressure vessel (1, 6) is provided with an appendage, for example a closure member or a pressure valve.

20. Method of manufacturing a fibre-reinforced pressure vessel comprising a rigid gas- or fluid-tight body overwound with fibre filaments, whereby the method comprises the steps of:

- a) providing a rigid gas- or fluid-tight body, fibre filaments and a winding apparatus;
- b) overwinding the rigid body such that at least a number of fibre filaments can move freely with respect to one another and the fibre filaments are wound such that when the pressure vessel is under internal pressure vessel the fibre filaments are loaded exactly in their longitudinal direction;

whereby no matrix material (for example, resin) is provided such that the fibre filaments would be incorporated in a matrix for that section of the pressure vessel in which the fibre filaments can move freely with respect to one another.

21. Method of manufacturing according to claim 20, whereby no matrix material at all is provided.

22. Mould for use in manufacturing a fibre-reinforced pressure vessel according to claim 20 ~~or~~ ~~claim 21.~~

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